Arkitektur og Lindring: Forsknings viden om rumlige og fysiske sansepåvirkninger

Michael Mullins, Associate Professor Ph.d. MAA.
Head of Department, Architecture Design and Media Technology, Aalborg University Denmark

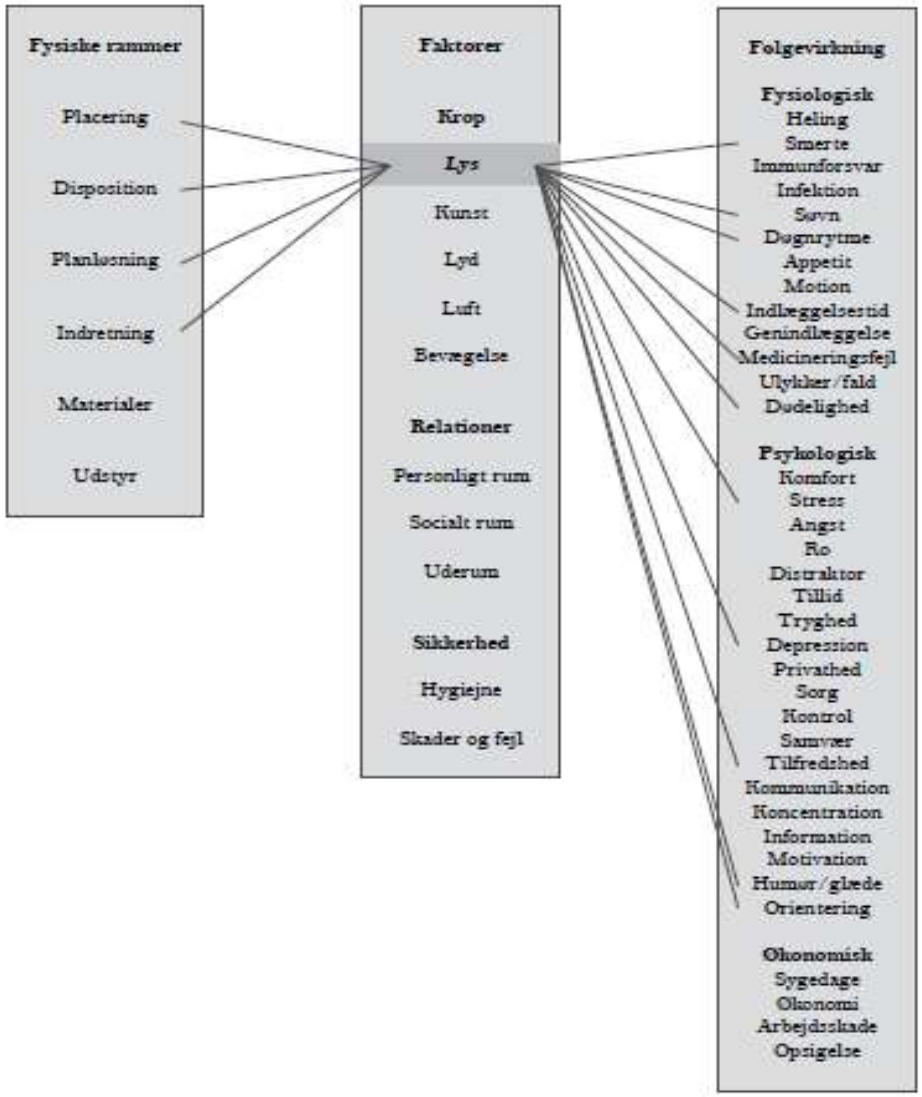
Palliative Treatment and Stress.

- Hospices can be designed to minimize the negative effects of stress-inducing environments, based on documented research.

Djursland Hospice Jylland by Ny Arkitektur

Design Research
Documented effects

Well-designed hospices should include architectural consideration of the documented effects of design factors on the human body



Light:
Design Factors

- Daylight, sunlight and windows
- Artificial light – colour, temperature
- Level of lighting – day and night
- Quality of light

Sollys i foyeren ved hovedindgangen,
Sygehus Vendsyssel, Hjørring

Light Effects

- User Satisfaction, patients and staff
- Orientation
- 24hr rhythm and sleep
- Depression
- Pain and Stress
- Level of Error in Medication
- Mood
- Stress

Design lighting to foster sense of control

- People have need for sense of control with respect to their surroundings
  - Uncontrollable conditions are stressful
  - In health facilities, loss of control is major problem that produces much stress in patients, worsens outcomes
- But stress can be reduced by design that enhances control

Salmon Creek, Washington


Loss of Control


Room
Reading
Hill-Rom
VERSACARE
Nurse
Channel
Curtain
TV
CC

LIGHT Reduces Depression

A meta-analysis of randomized controlled studies published in *American Journal of Psychiatry* concluded that **light treatment for depression is "efficacious, with effect sizes equivalent to those in most antidepressant pharmacotherapy trials"** (Golden et al. 2005)

STUDY: Natural light and depression

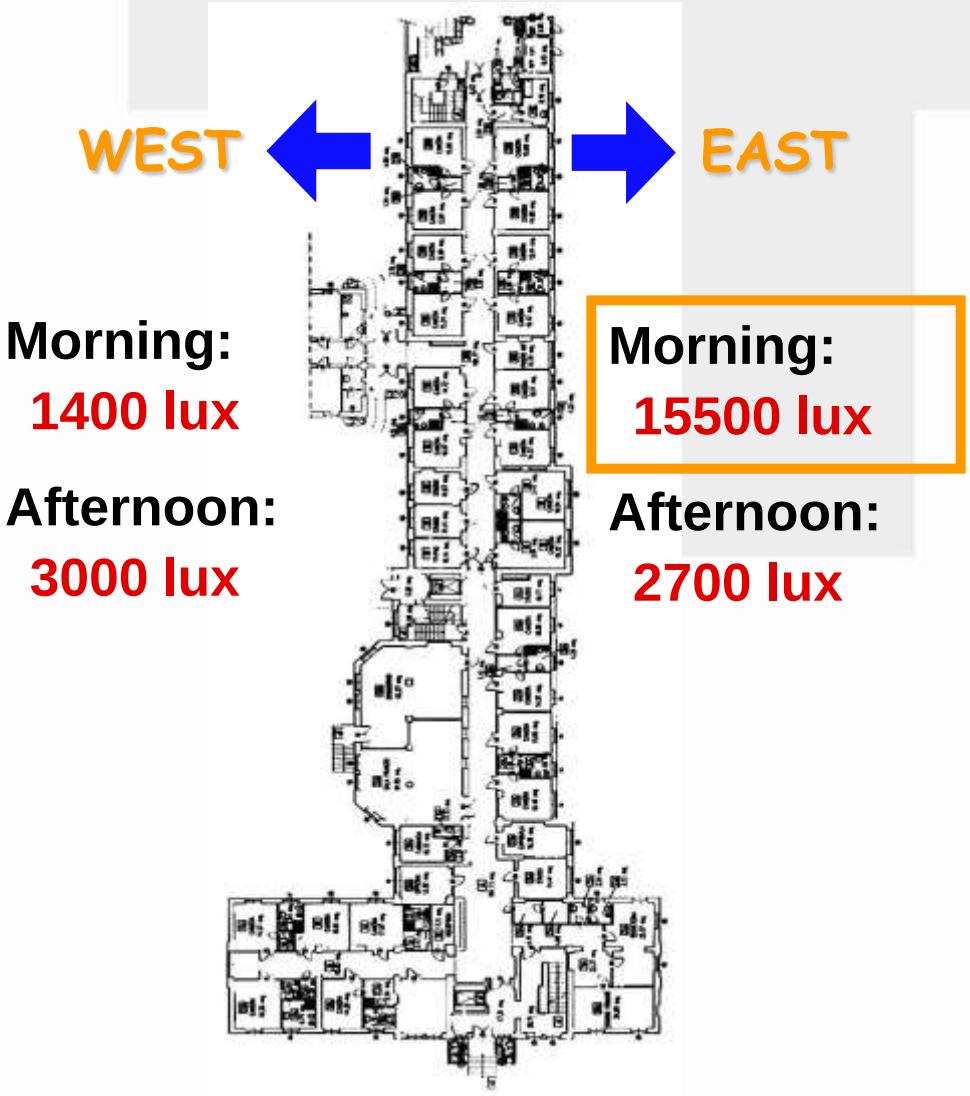
by Benedetti et al., 2001

Patients:

602 diagnosed with severe depression

Findings:

Those with high levels of morning sunlight (east facing rooms) had shorter stays by 3.7 days



Östra Psychiatric Hospital, Gothenburg

Architecture: White

Newhaven Downs House
United Kingdom
Design: Penoyre & Prasad

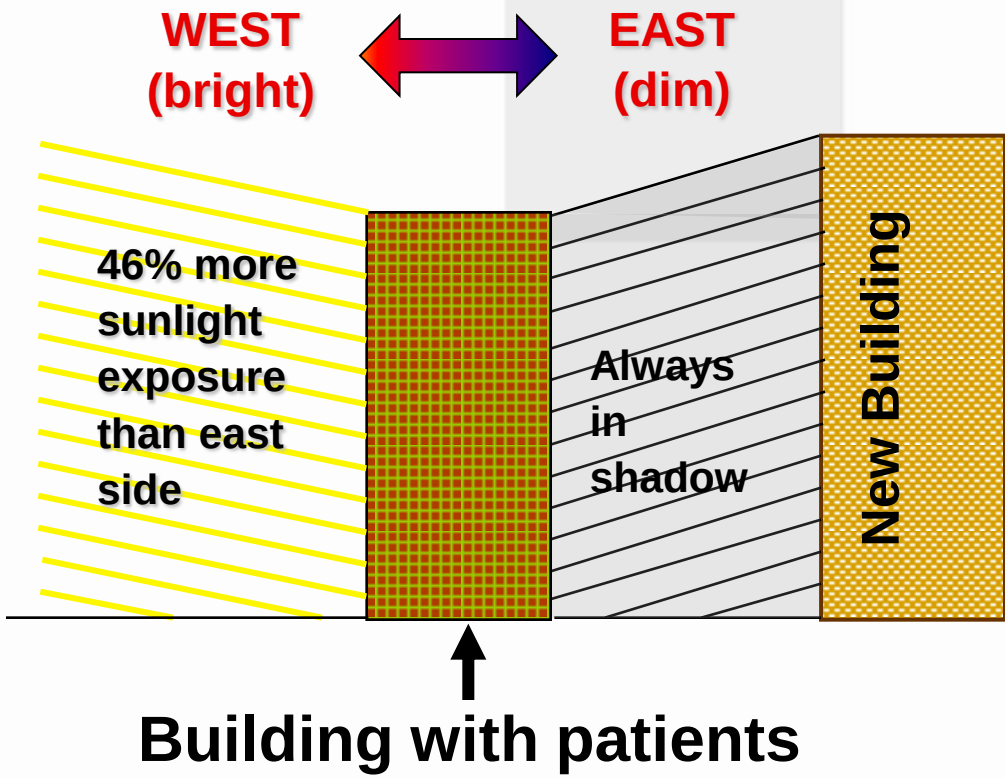
STUDY: Natural light and pain
by Walch, Rabin et al., 2005

Patients:

89 adults undergoing elective cervical and lumbar spinal surgery

Findings:

Patients with higher levels of sunlight were less stressed, reported less pain, took 22% less pain medication, and had 21% less pain medication costs



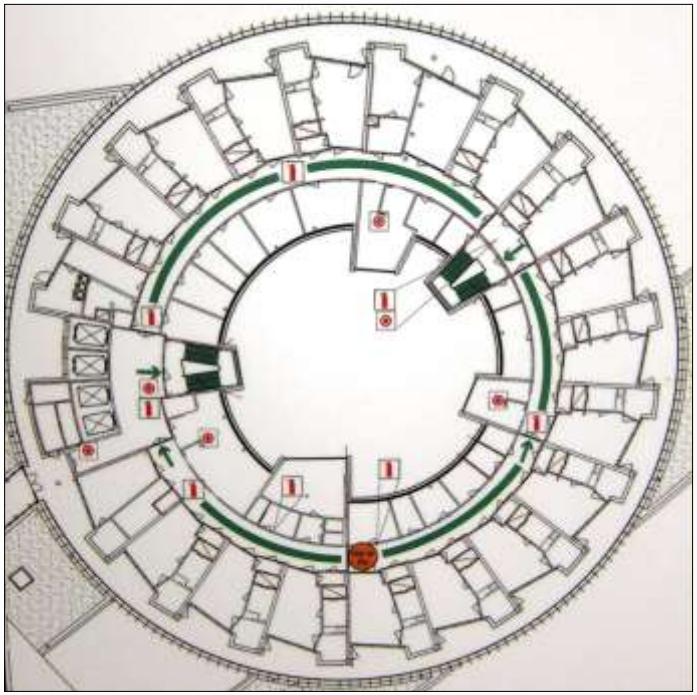
Natural Light Improves Staff Outcomes

- Nurses with higher access to daylight report less work stress, higher satisfaction, and better health status need

(Mrockzek et al., 2005; Alimoglu & Donmez, 2005)

Emergency department nurse station St. Mary's Hospital, Walla Walla

Staff work area Doernbecher Hospital, Oregon



Design for daylight in staff spaces

Infectious Disease Clinic
Malmo University Hospital

Light references

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Sound
Design Factors

- Decibel Levels
- Reverberation time
- Type and quantity of equipment
- Acoustic screening
- Single wards

Akustisk regulering integreret i facadebeklædningen, Rikshospitalet Oslo

Sound:
Effects

- General patient and staff wellbeing
- Sleep
- Pain distracter
- Stress and physiological affects
- Confidentiality and privacy
- Workplace satisfaction
- Communication
- Level of Error

Sound: references

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Artwork
Design Factors

- Colour
- Visual and Audio Distracters
- Context related
- Orientation

Kunstværk ved hovedindgangen, Klinikum der J.W. Goethe-Universität, Frankfurt

Artwork
Effects

- Pain
- Orientation
- Distracter
- Tranquillity
- Admission length and mortality
- Pain and Stress
- Level of Error in Medication

Artwork references

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Air and Smell Design Factors

- Natural ventilation
- Mechanical ventilation filtering systems
- Materials and surfaces

Air and Smell
Effects

- General patient and staff wellbeing
- Pain distracter
- Stress and physiological affects
- Anxiety

Air and Smell references

- Lehrner, J., Eckersberger, C., Walla, P., Potsch, G., & Deecke, L. (2000). Ambient odor of orange in a dental office reduces anxiety and improves mood in female patients. *Physiology & Behavior, 71*(1-2), 83.
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Environmental stress (pp. 179). New York: Cambridge University Press.

Movement and Navigation
Design Factors

- Clarity of plan
- Clearly understood entrance
- Information and signage design
- Spatial reference frames
  ‘Internal’ landmarks

Movement and Navigation
Effects

Orientation and stress

Distribution of service areas

Walking distances for patients and staff

Movement and Navigation references

- O'Neill, M. J. (1991a). Evaluation of a conceptual model of architectural legibility. *Environment & Behavior, 23*(3), 259.
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Personal Space
Design Factors

- Single rooms
- Storage space
- Bathrooms
- Unassisted ablutions

Udsigt og stol der giver mulighed for at trække sig tilbage, Östra sjukhuset, Göteborg

Personal Space
Effects

- Admission length
- Mortality
- Comfort
- Privacy
- Control
- Social interaction
- User Satisfaction
- Communication

Personal Space references

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- Altimier, L. M., Eichel, M., Warner, B., Tedeschi, L., & Brown, B. (2005). Developmental care: Changing the NICU physically and behaviorally to promote patient outcomes and contain costs. *Neonatal Intensive Care, 18*(4), 12.
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Social Space
Design factors

- Plan layout
- Direct contact
- Waiting areas
- Treatment rooms
- Kitchenettes
- Activity rooms
- Semi-private common rooms
- Room design and interior design

Rum for social interaktion, Rikshospitalet Oslo

Social Space
Effects

- Healing
- Appetite
- Admission length
- Comfort
- Stress
- Anxiety
- Safety
- Privacy
- Communication
- Mood

Social Space references

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Outdoor Space
Design factors

- Views
- Visual stimulation
- Visibility, centrally placed
- Accessibility
- Vegetation
- Sound, smell, sight, touch,

Stiforløb gennem haven som forbinder hospitalets mange afdelinger, Bispebjerg Hospital, København

Outdoor Space
Effects

- Pain Distracter
- Stress
- Physical Exercise
- Admission length
- Mortality
- Anxiety
- Privacy
- Social interaction
- Mood
- Orientation
- User satisfaction

Outdoor Space references

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Hygiene
Design Factors

- Handwash facilities
- Water supply
- Ventilation system and filters
- Materials and finishes

Flersengsstue med dør til altan, Darmstädter Kinderklinken Prinzessin Margaret, Darmstadt

Hygiene
Effects

- Infection
- Ventilation
- Admission length
- Economy

Hygiene references

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Injuries and Errors
Design Factors

- Acoustics, Lighting
- Control stations
- Manouvring areas and volume
- Furnishes and fittings
- Materials
- Equipment

Rum for samarbejde og fortrolig videndeling mellem personalet, A-Hus Oslo

Injuries and Errors
Effects

- Admission length
- Medication errors
- Communication
- Concentration
- Staff sick leave
- Economics
- Work related injuries

Injuries and Errors references

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Central Literature

- Sansernes hospital (red.: L. Heslet og K. Dirchinck-Holmfeldt)
- The Role of the Physical Environment in the Hospital of the 21st Century: a Once-in-a-lifetime Opportunity (R.Ulrich et al)
- Arkitektur og design for livskvalitet og helse. En kartlegging af foreliggende forskning. (K. Hammerstrøm og A. Bjørndal, Kunnskapscenteret)
- A Review of the Research Literature on Evidence-Based Healthcare Design (R. Ulrich et al)